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Sprague

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(54) **PUSH PAD EXIT DEVICE FOR EMERGENCY DOOR EGRESS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 111 days.

This patent is subject to a terminal disclaimer.

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E05B 65/10 (2006.01)
E05C 3/16 (2006.01)

(52) **U.S. Cl.**
CPC ***E05B 65/1093*** (2013.01); ***E05B 65/1006*** (2013.01); ***E05B 65/1053*** (2013.01); ***E05C 3/162*** (2013.01)

(58) **Field of Classification Search**
CPC E05B 65/1093; E05B 65/1006; E05B 65/1053; E05C 3/162
See application file for complete search history.

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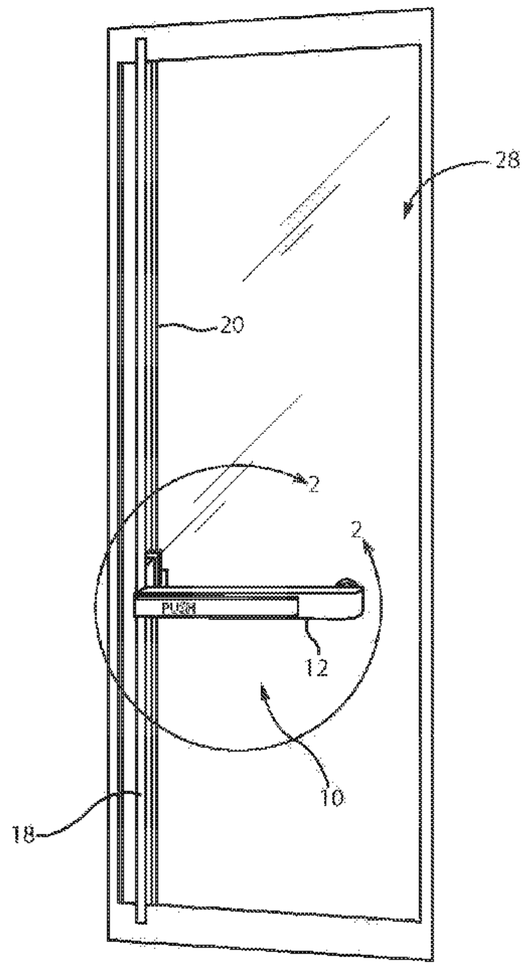
(57) **ABSTRACT**

A push pad exit device comprising a horizontal push bar actuator mechanically linked to a vertical door handle assembly, for use on the interior side of entrance doors where a means of emergency egress is desired, is presented. The operating mechanisms of the push bar actuator and vertical door handle assembly are concealed presenting a smooth uncluttered appearance. In one mode of operation, the push pad actuator may be moved inwards towards the door face causing the door to unlatch. The push pad exit device may also be equipped with a "dogging feature" which locks the push bar actuator in the unlatched position. In this mode of operation the door is unlatched and the push pad actuator may be used as a fixed door handle. The push pad exit device may also be equipped with a keyed lock on an external face of the door.

10 Claims, 10 Drawing Sheets



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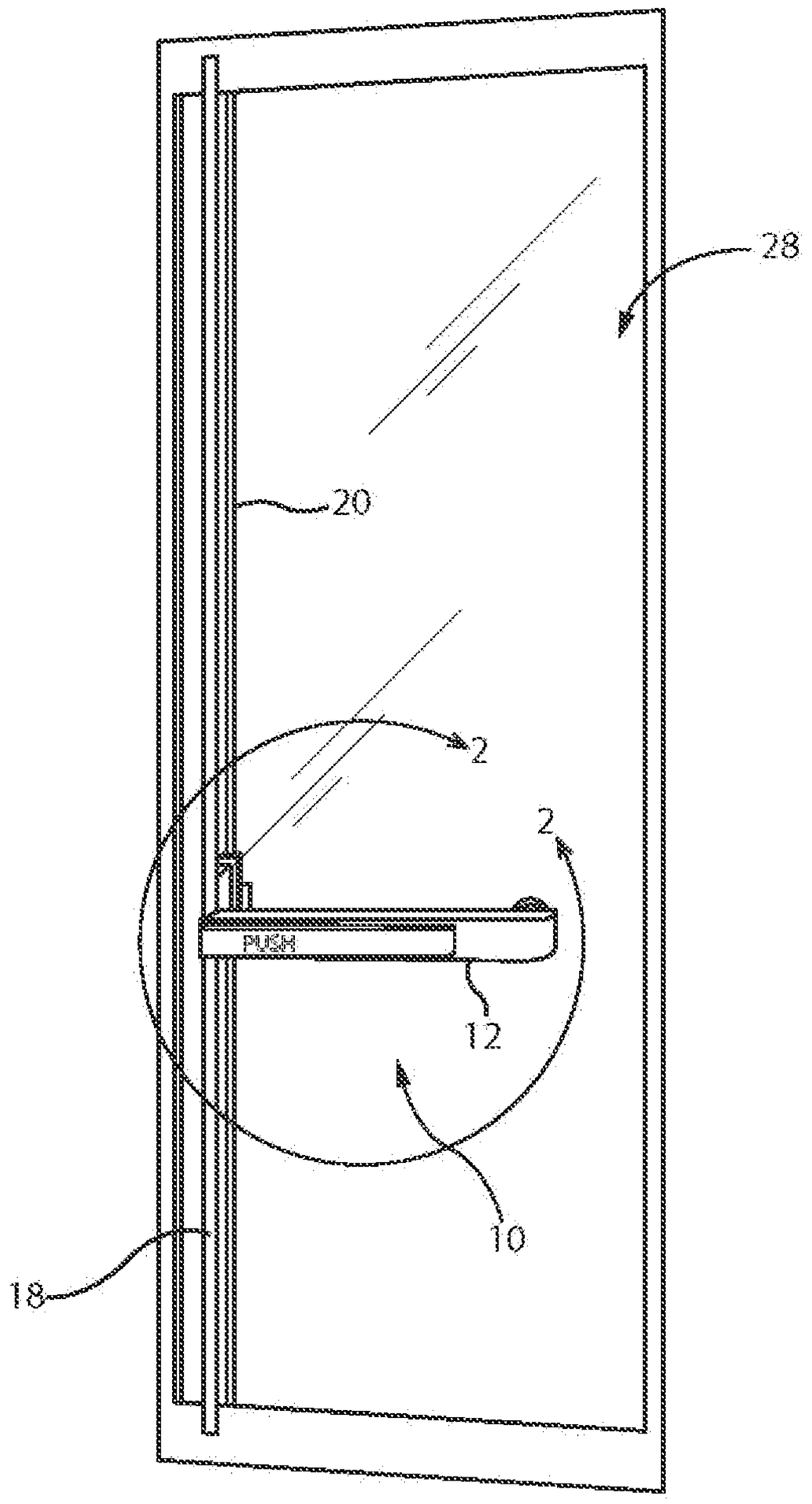

Fig. 1

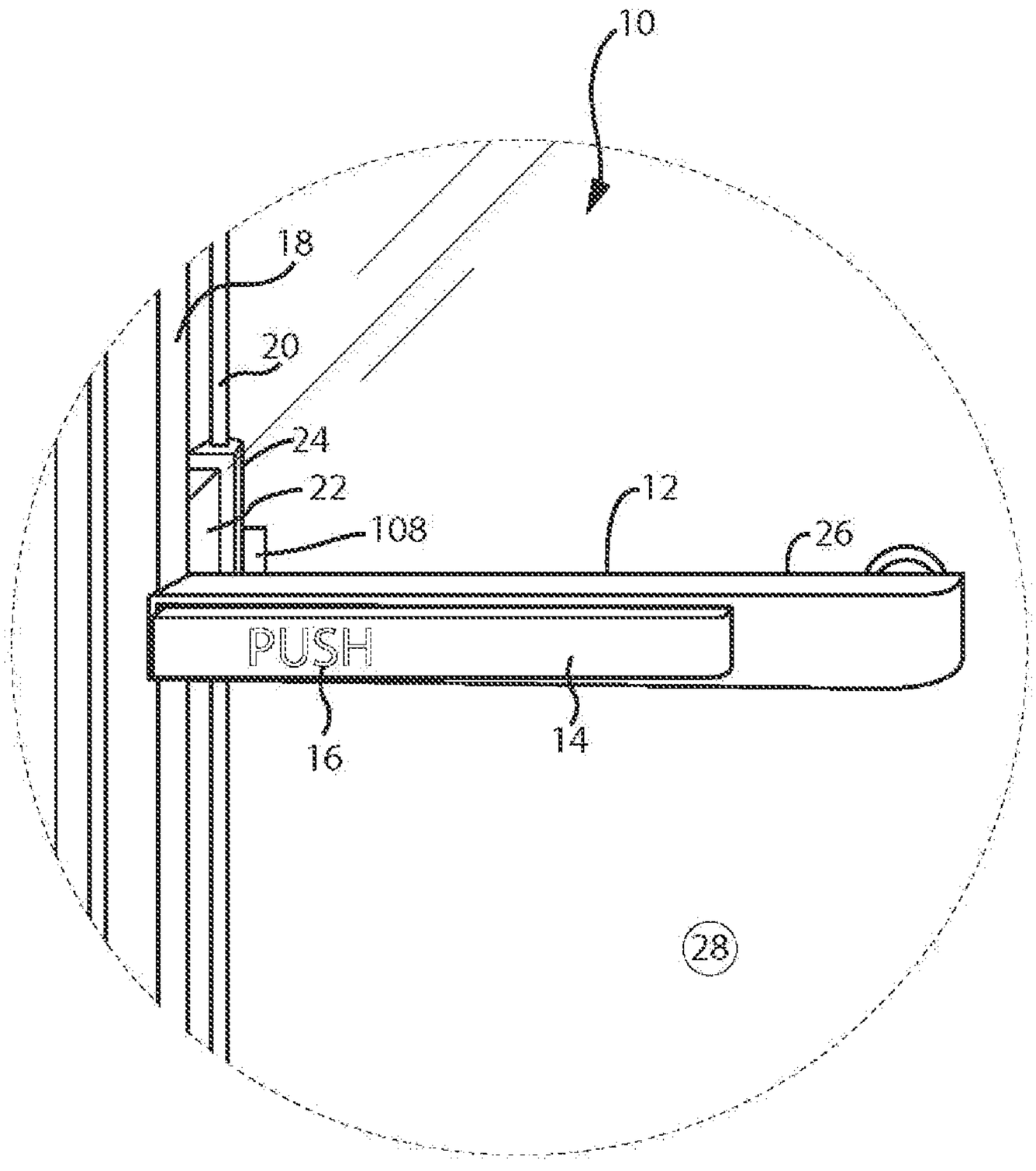

Fig. 2

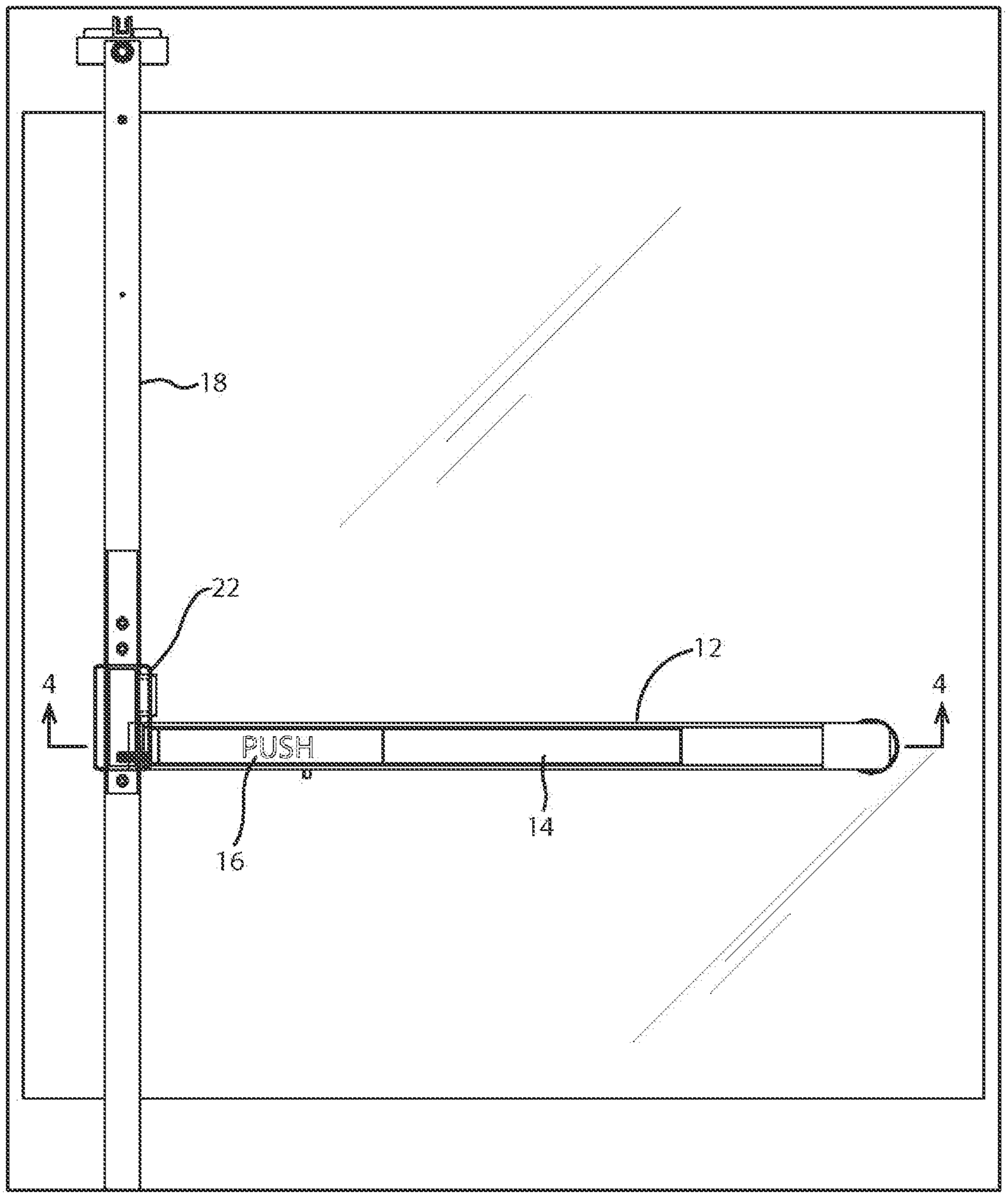

Fig. 3

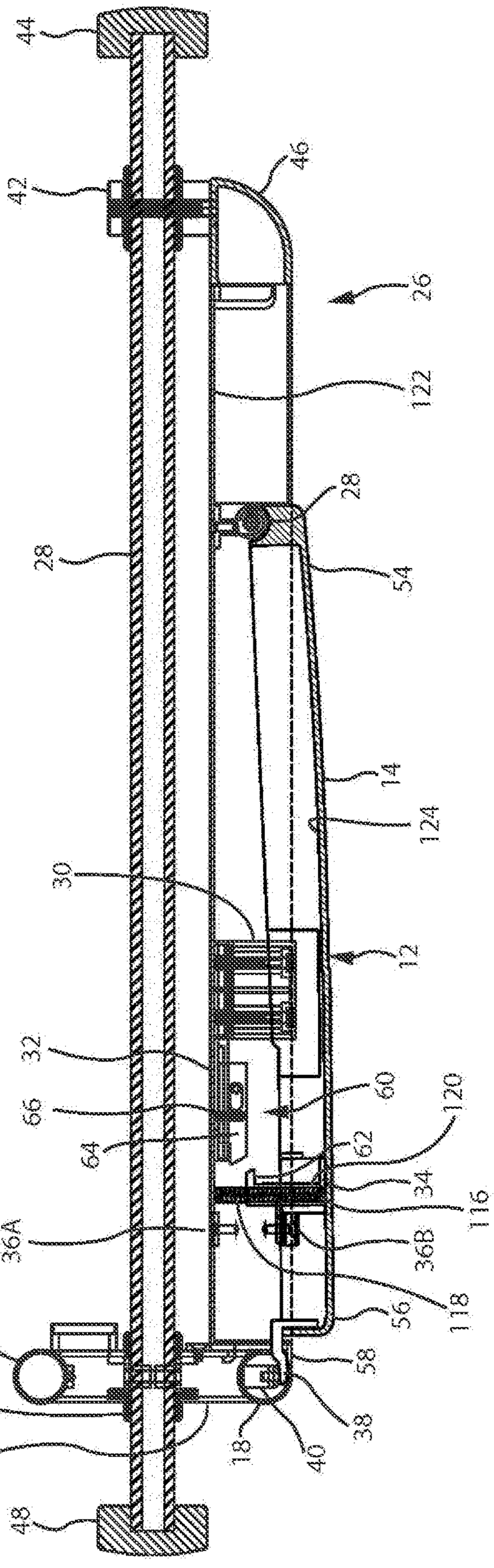
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Fig. 4A

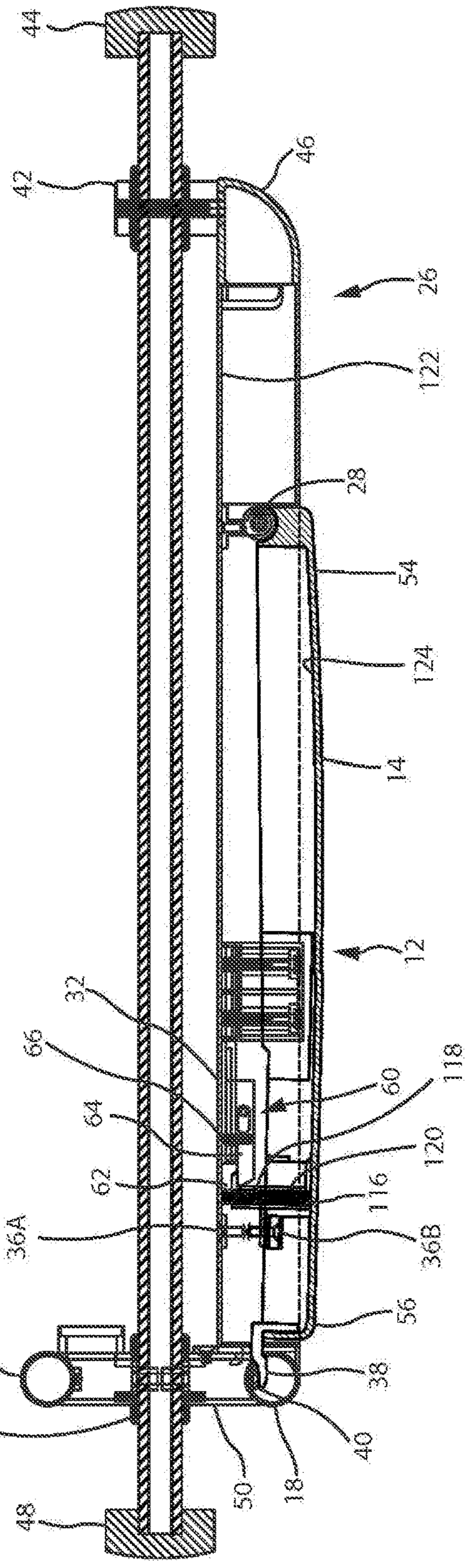
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Fig. 4B

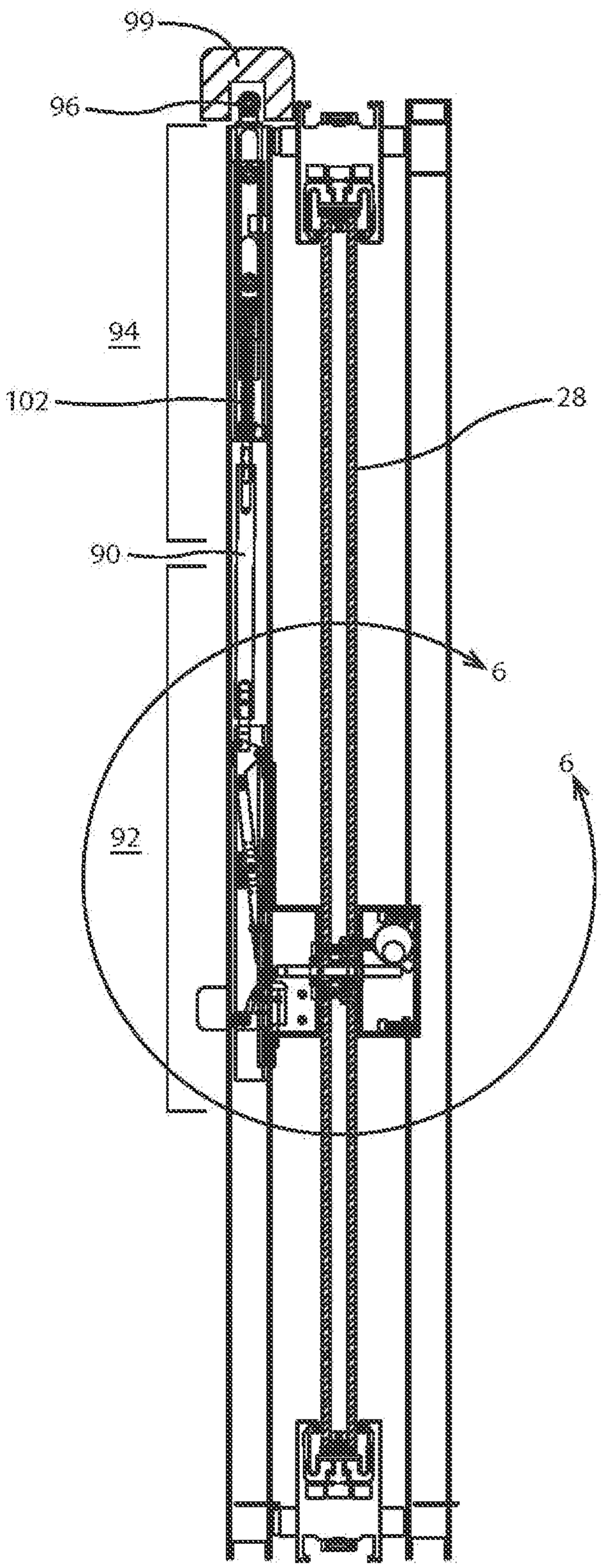

Fig. 5

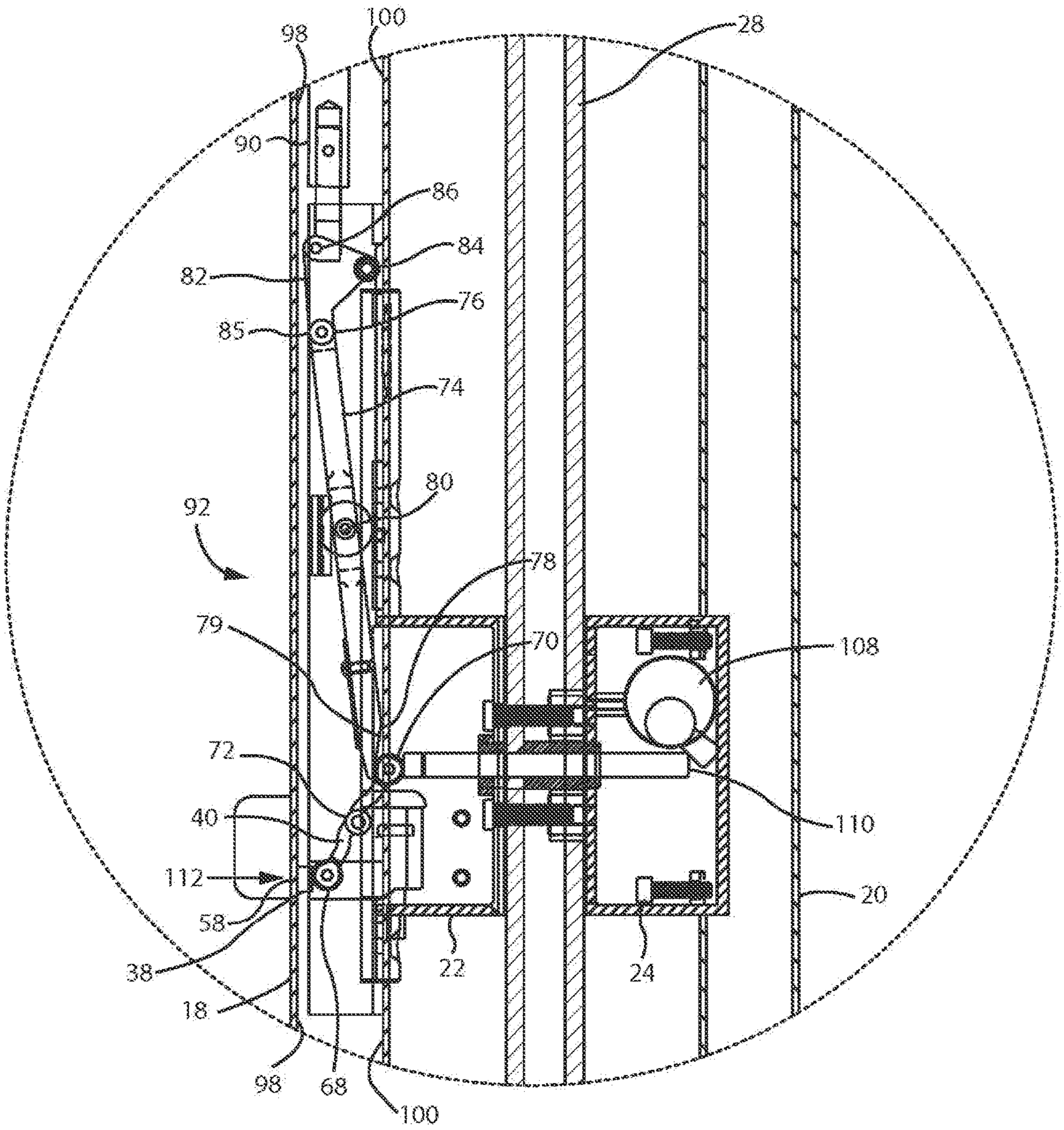
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Fig. 6A

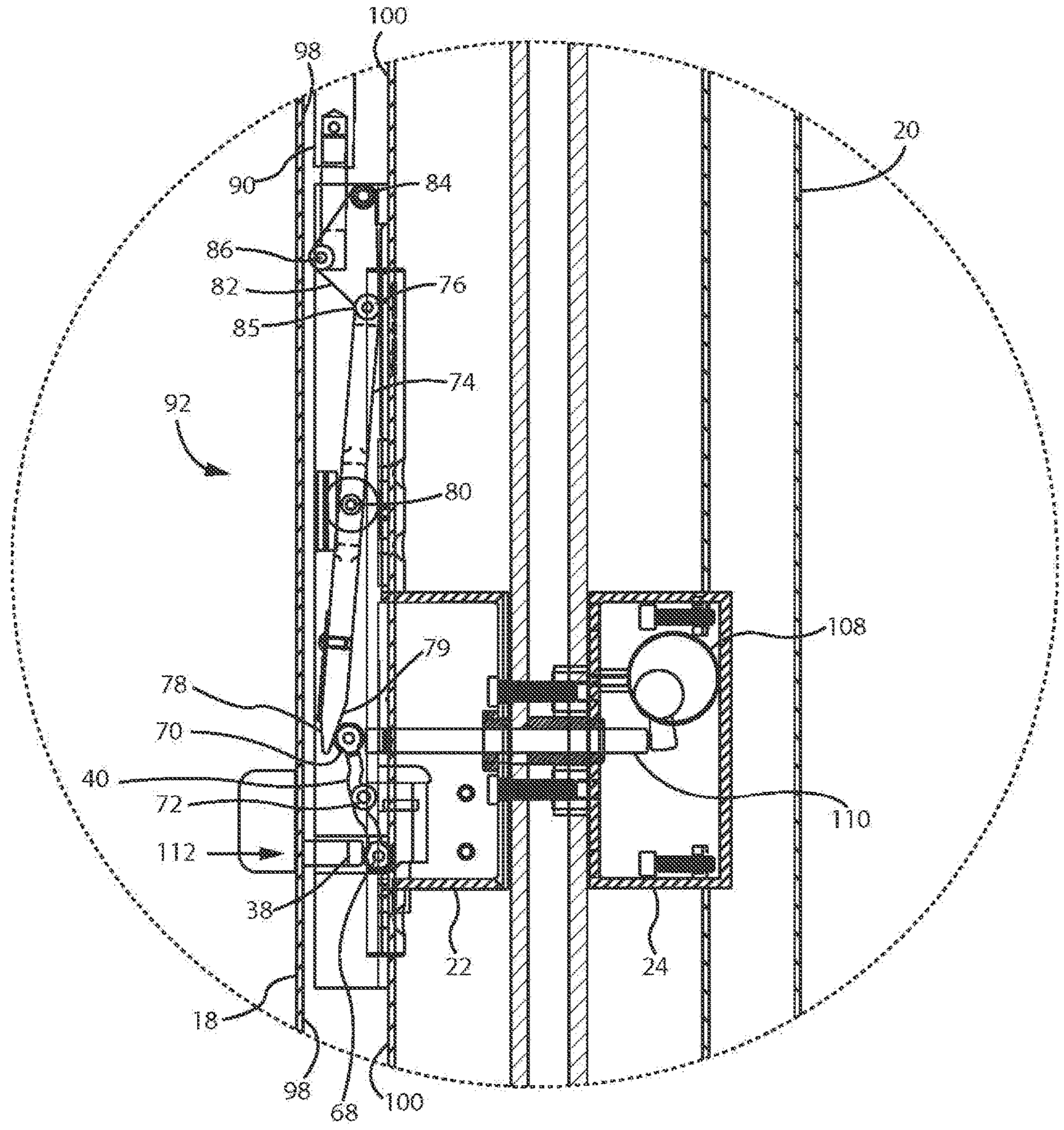
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Fig. 6B

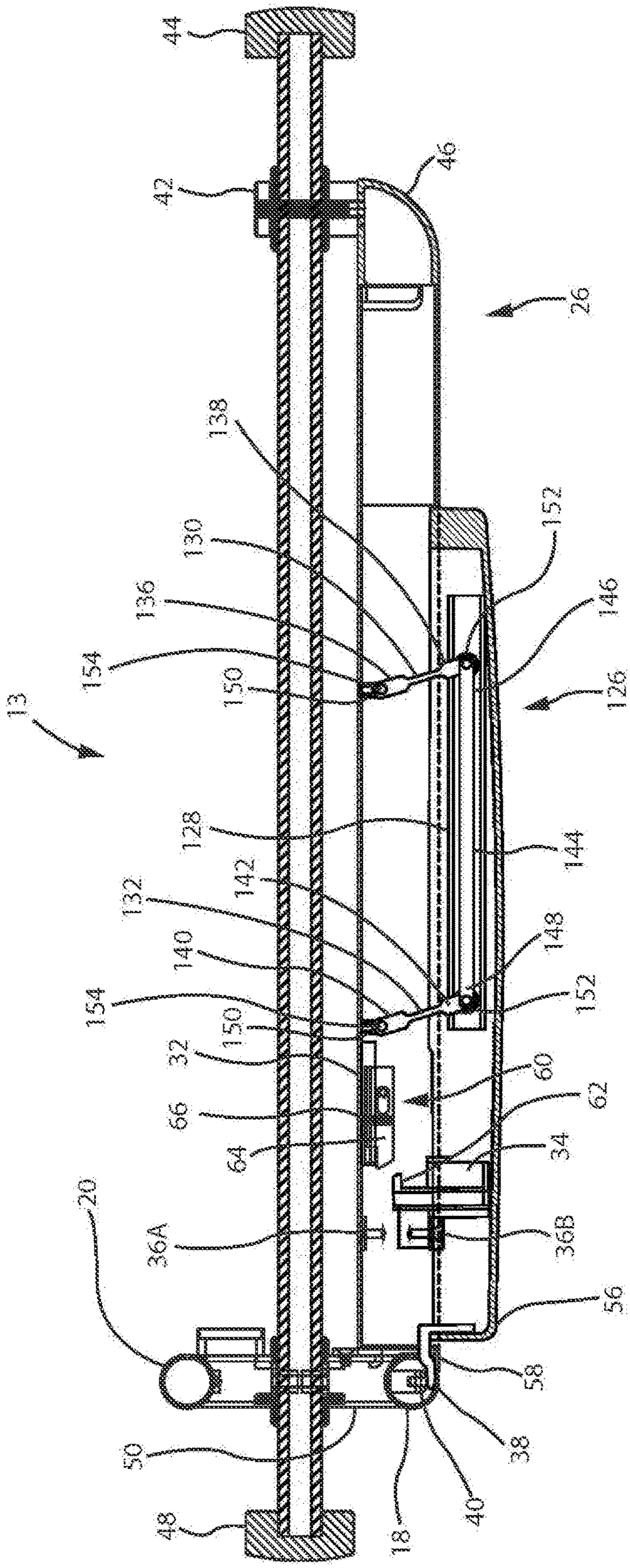
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Fig. 7A

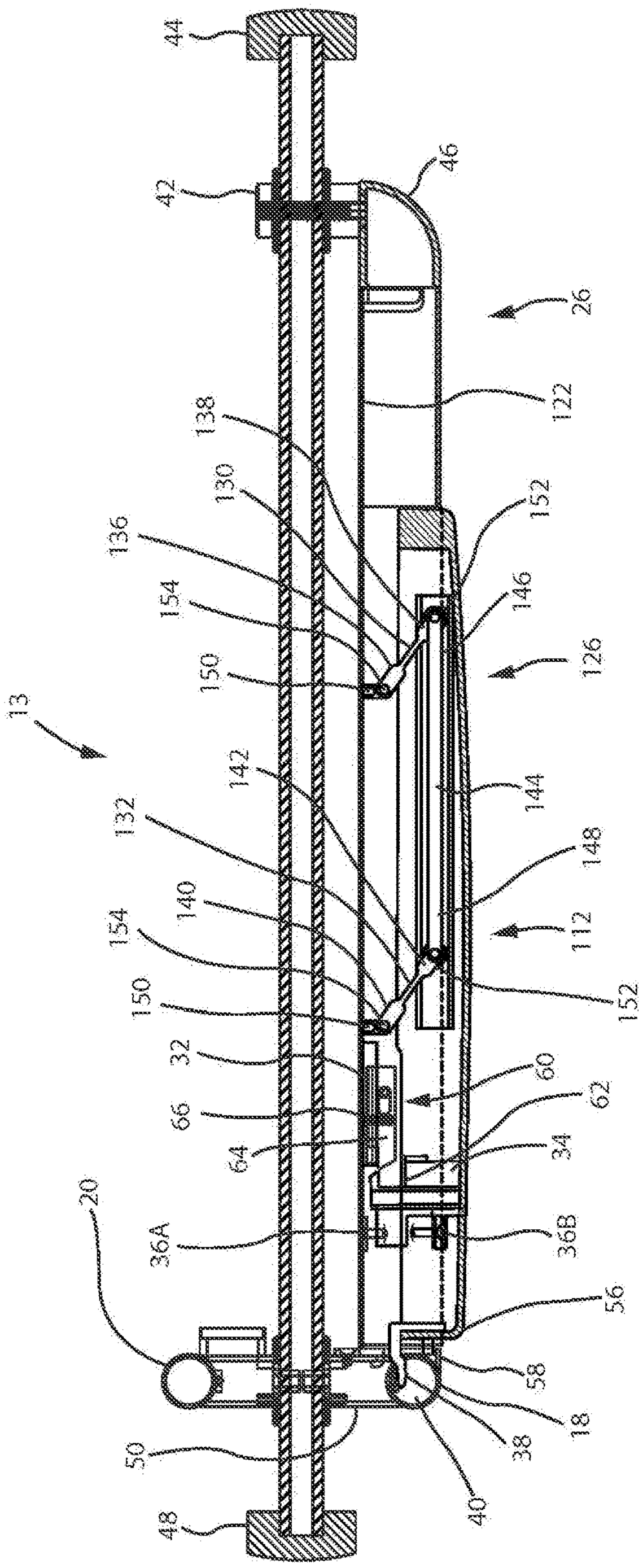
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Fig. 7B

PUSH PAD EXIT DEVICE FOR EMERGENCY DOOR EGRESS

CROSS-REFERENCES TO RELATED APPLICATION

This application claims the benefit of U.S. patent application Ser. No. 15/956,241, filed Apr. 18, 2018 and entitled "Push Pad Exit Device for Emergency Door Egress," which is incorporated herein by this reference.

FIELD OF THE INVENTION

The present invention relates generally to panic handles for doors and more particularly to panic handles featuring a horizontally oriented push bar mechanically connected to a vertically oriented latch mechanism.

BACKGROUND OF THE INVENTION

A panic handle exit device allows persons within the interior of a room or building to readily open a door in a latched position by simply pushing on an interior handle for unlatching the door. The interior handles of a panic handle exit device typically comprise a push bar mounted to the door.

The push bar is mechanically linked to a door latch mechanism for locking and unlocking the door. The push bar is typically movable in a pivoting motion from a locked position (i.e. a position away from the door) to an unlocked position (i.e. a position close to the door) to actuate the door latch mechanism when pressure is applied along the surface of the push bar. Depressing the push bar toward the door translates a mechanical linkage for actuating the door latch mechanism in order to retract the door latch so that the door can be opened. A primary benefit of panic exit devices is that they provide unlatching of the door in a quick and simple manner. For this reason, panic exit devices are often utilized in applications which require ready exit from a building in case of an emergency.

In some panic exit devices, a fixed exterior handle is included to provide a symmetrical appearance. In addition, the door latch may be actuated from the exterior side of the door via a lock mechanism using a key or key pad. Typically the lock mechanism may be a mechanical lock, a magnetic lock or a solenoid operated lock.

While many panic handle designs are the art, there remains room for improvement.

SUMMARY OF THE INVENTION

The present invention improves upon the prior art by providing a push pad exit device having a push pad actuator mounted horizontally onto an interior surface of a door, fixedly connected to the door at the door's hinge side, and fixedly mounted to a vertically oriented door handle assembly located on the interior surface of the door at the door's latch side. The interior vertical handle assembly is fixedly mounted to the interior surface of a door at the bottom and/or top of the door and at a centrally located interior housing located on the interior surface of the door. The interior vertical handle assembly conceals a latch mechanism comprising linkages that operate the latching bolt assemblies at the top and/or bottom of the door.

The push pad actuator and associated interior vertical handle assembly will typically be used on building entrance doors and other doors where emergency egress is desired.

The push pad actuator and interior vertical handle assembly optionally include a "dogging" feature wherein the dogging feature holds the latch mechanism in the unlatched or unlocked position and thereby allows the door to open and close freely from the exterior surface or side of the door, which typically corresponds to the exterior of a building or room from which emergency egress is desired.

In addition, the door may be equipped with a centrally located exterior housing on its exterior surface that includes a key-lock mechanism which communicates with the centrally located interior housing via a push rod that defeats the latch mechanism and thereby allows a user to unlock a locked door from the outside.

Experimentation has shown that locating the push bar actuator and centrally located interior and exterior housings at a position of about 42" above a finished floor, is the most ergonomically desirable position for a majority of users. In one preferred embodiment for use with glass doors, a fixed exterior vertical handle is located adjacent the interior vertical handle such that the exterior and interior handles appear as one continuous handle. It is preferable that the interior and exterior vertical door handles are both the full height of the door. It is further desirable that the push pad actuator be visibly labeled with a "PUSH" indicator, which may be engraved on the actuator.

The above and other advantages of the push pad exit device of the present invention will be described in more detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a glass door with the push pad exit device of the present invention installed.

FIG. **2** is an enlarged detail view showing the push pad exit device FIG. **1** installed on a glass door.

FIG. **3** is a front plan view f the push pad exit device of FIG. **1**.

FIG. **4**A is a sectional view of the push pad exit device taken alone the line **4-4** of FIG. **3**, showing the push pad actuator in the latched position.

FIG. **4**B is a sectional view of the push pad exit device taken along the line **4-4** of FIG. **3**, showing the push pad actuator in the unlatched position.

FIG. **5** is a left end view of the glass door of FIG. **1**.

FIG. **6**A is an enlarged detail sectional view of a portion of FIG. **5**, as shown by circle **6-6** of FIG. **5**, showing the latching mechanism in the latched position.

FIG. **6**B is an enlarged detail sectional view of FIG. **5**, as shown by circle **6-6** of FIG. **5**, showing the latching mechanism in the unlatched position.

FIG. **7**A is a sectional view of the push pad exit device taken along the line **4-4** of FIG. **3**, showing an alternative embodiment of the push pad actuator in the latched position.

FIG. **7**B is a sectional view of the push pad exit device taken along the **4-4** of FIG. **3**, showing an alternative embodiment of the push pad actuator in the unlatched position

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. The invention may, however, may be embodied in many different forms and should not be construed as being limited to the embodiments set forth herein. Rather these embodi-

ments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

With reference to FIGS. **1** and **2**, the appearance of the push pad exit device **10** of the present invention is shown. The push pad exit device **10** generally comprises a horizontal push pad actuator **12**, an interior vertical door handle assembly **18**, an exterior vertical door handle assembly **20** (optional), a centrally located interior housing **22**, a centrally located exterior housing **24** (optional) and a lock **108** (optional).

As shown by FIGS. **1** and **2**, the horizontal push pad actuator **12**, interior vertical door handle assembly **18**, exterior vertical door handle assembly **20**, centrally located interior housing **22**, and centrally located exterior housing **24** are mounted to a door **28**. In typical installations, the door **28** will be either a single or double pane glass door.

Referring to FIGS. **1-6** and **4**A-**4**B and **6**A-**6**B, in particular, the overall operation of the push pad exit device **10** of the present invention will be described. As shown in FIGS. **2** and **4**, the push pad actuator **12** includes a push pad actuator housing **26** and a push pad actuator arm **14**. The front face of the actuator arm **14** will typically be engraved or otherwise marked with nomenclature **16**, such as the word "PUSH," to make clear where the push pad actuator **12** must be pushed to operate the push pad exit device **10**. (See FIG. **2**.)

With reference to FIGS. **2**, **4**A and **4**B, the push pad actuator housing **26** is fixed at one end **46** near a pivoting end **44** of the door **28** and at another end **50** near a free or swinging end **48** of the door **28**. For purposes of illustration only, a double pane swinging glass door is shown schematically in the figures. The push pad exit device **10** is not limited to use with double pane glass doors but rather may be used with any type of swinging door, i.e. including single pane glass doors and non-glass, i.e. wood or metal, doors. Suitable attachment hardware **42** and **52** for attaching the push pad actuator housing **26** at the pivoting end **44** and free or swinging end **48** of the door **28** is known in art. Such hardware will vary in configuration depending upon the specific type of door construction, i.e. glass, double pane glass, or wood or metal.

With continued reference to FIGS. **4**A and **4**B, the push pad actuator **12** includes the push pad actuator arm **14**. The push pad actuator arm **14** has a pivoting end **54** and a free end **56**. The pivoting end **54** is connected to the push pad actuator housing **26** by a pivot assembly **28**. The push pad actuator arm **14** is constrained against lateral or side-to-side movement by a guide block **30**. Rotational movement of the push pad actuator arm **14** is limited in a direction outward with respect to a plane of the door **28** by a blocking surface **58** located on the push pad actuator housing **26**. Rotational movement of the push pad actuator arm **14** inwardly towards the plane of the door is limited by travel stop limiter screws **36**A and **36**B. The free end **56** of the push pad actuator arm **14** includes a connecting tongue **38** which contacts a motion transfer link **40** contained within the interior vertical door handle **18**.

The push pad actuator arm **14** is biased in an outward or door locked position by a biasing spring **116** which at one end is inserted in a bore **120** in a catch fitting **34** wherein the spring end bears against a wall surface **124** of the push pad actuator arm **14**. Another end of the biasing spring **116** is inserted into a plunger **118**, wherein the plunger **118** resides partially within the bore **118** of the catch fitting **34**. The plunger **118** bears against a wall surface **122** of the push pad actuator housing **26**.

FIG. **4**A shows the push pad actuator **12** in a first or latched position. In this position, the push pad actuator **12** is biased, by the motion traversing link **40** and the return spring **116**, such that the connecting tongue **38** is in contact with the blocking surface **58** located on the push pad actuator housing **26**. FIG. **4**B shows the push pad actuator **12** in a second or unlatched position. In this position the actuator **12** is biased, by a user pushing on the actuator arm **14**, such that the travel limiting screws **36**A and **36**B are in contact.

The push pad actuator **12** may optionally be equipped with a manual catch or dogging assembly **60** which comprises a catch fitting **34** having a catch **62** and a slide assembly **32** having a slide member **64** and a finger extension **66** attached to the slide member **64**. The manual catch **60** allows a user to lock the door **28** in an unlatched position which thereby allows door to swing freely and the push pad actuator **12** to be used as an interior door handle. The manual catch **60** is simple to operate. A user need only depress the push pad actuator arm **14** until it contacts the travel limit screws **36**A and **36**B i.e. until it stops moving, and slide the slide member **64** towards the free end **48** of the door **28** until movement stops. At this point, the slide member **64** will have engaged the catch **62** and the door **28** will be held in an unlatched position. The manual catch **60** is shown in the engaged position in FIG. **4**B and in the disengaged position in FIG. **4**A.

Referring now to FIGS. **5**, **6**A and **6**B, enclosed within the interior handle **18** are a latching mechanism or latching assembly **92** and a representative latch bolt assembly **94** (see FIG. **5**). The latching mechanism **92** and latch bolt assembly **94** are operable between a first latched position and a second unlatched position. Suitable latch bolt assemblies for use in the present invention are known in the art and are commercially available. (Blumcraft Part No. MPHTOP, is one such suitable latch bolt assembly.) As shown in FIG. **5**, the representative latch bolt assembly **94** includes a biasing spring **102** that biases a latch bolt **96** upwardly into a recess **99** in a door frame (i.e. a first latched position) and is configured such that an upwardly directed biasing force is applied to a series of links, i.e. the motion transfer link **40**, a lever arm **74**, and an over-center link **82** which comprise the latching mechanism **92**, as well as a connecting rod **90** which interconnects the latching mechanism **92** with the latch bolt assembly **94** (see FIGS. **6**A and **6**B).

The upwardly directed biasing force applied by biasing spring **102** biases the latching assembly **94** and its associated components, i.e. motion transfer arm **40**, lever arm **74** and over-center link **82**, into the first latched position, as shown in FIG. **6**A. The operation of the latching mechanism **92** of the present invention will be described hereinafter.

As shown in FIG. **5**, the latch bolt **96** engages a latching recess **99** which secures the door **28** in the latched position. With reference to FIGS. **6**A and **6**B, the door is unlatched when a force **112** is applied to the push pad actuator arm **14** which overcomes the biasing force applied by biasing spring **102** of the latch bolt assembly **94** and which causes the connecting tongue **38** to depress inwardly a lower link end **68** of the motion transfer link **40** which initiates a sequence of events which causes the lever arm **74**, over-center link **82** and connecting rod **90** to withdraw the latch bolt **96** from the latching recess **98** and allow the door **28** to swing freely.

With reference to FIGS. **6**A and **6**B, an inwardly directed force **112** (from pushing on the push pad actuator arm **14**) overcomes the biasing force applied by biasing spring **102**

and causes the connecting tongue **38** to depress or push the lower link end **68** from a first latched position on interior wall surface **98** (see FIG. **6**A) of the interior vertical handle **18** to a second unlatched position an opposite interior wall surface **100** (see FIG. **6**B) of the handle **18**. This causes motion transfer link **40** to pivot about pivot point **72** such that upper link end **70** of the motion transfer link **40** moves from its first latched position at interior wall surface **100** (see FIG. **6**A) to a second unlatched position on opposite interior wall surface **98** (see FIG. **6**B). This in turn causes upper link end **70** of the motion transfer link **40** to press upon lower link end **78** of the lever arm **74** and causes the lever arm **74** to move from its first latched position on interior wall surface **100** (see FIG. **6**A) to a second unlatched position on opposite interior wall surface **98** (see FIG. **6**B).

It should be noted that the function of the motion transfer link **40** is to convert horizontal motion from the push pad actuator arm **14** via connecting tongue **38** into vertical motion in the latching mechanism **92**.

In moving from its first latched position to its second unlatched position, motion transfer link **40** causes lever arm **74** to pivot about pivot point **80** and therein causes upper link end **76** to move from its first unlatched position on interior wall surface **98** (see FIG. **6**A) to a second latched position on opposite interior wall surface **100**. This motion causes the over-center link **82** to change position from its first latched position (see FIG. **6**A) to a second unlatched position as shown in FIG. **6**B. This in turn causes connecting rod **90** to be pulled downwardly which pulls the bolt assembly **94** downwardly causing bolt **96** to be withdrawn from bolt recess **99** (see FIG. **5**), i.e. to a second unlatched position, thereby unlatching the door **28**. Once unlatched, if desired, the latching mechanism **92** (and push pad actuator arm **14**) may be retained in the unlatched position by actuation of the manual catch assembly or dogging mechanism **60**, as described above.

Lower and upper link ends **68** and **70** of the motion transfer link **40** will typically be equipped with rollers. Lower link end **78** of lever arm **74** is configured as an angled surface or wedging surface **79**. Upper link end **70** of motion transfer link **40** will typically roll against the angled surface **79**, when moving from its first latched position to its second unlatched position. Upper link end **70** may also be configured to slide against die angled surface **79**. Similarly, connection point **84** of over-center link **82**, will typically be equipped with a roller. When moving from its first latched position to its second unlatched position, connection point **84** will roll upwardly along the interior wall surface **100** of the door handle **18** and will roll downwardly along the interior wall surface **100** when returning to its first latched position. Connection point **84** may also be configured to slide against interior wall surface **100**.

Upon the removal of pushing force **112** (inwardly directed force) from the push pad actuator arm **14**, upwardly directed biasing force applied by the biasing spring **102** of bolt assembly **94** causes the lever arm **74** to rotate (or flip) from its unlatched position (see FIG. **6**B) back to its latched position (see FIG. **6**A). Upper link end **76** of lever arm **74** and connection point **85** of over-center link **82**, will typically be connected via a common roller. Connection point **84** of the over center link **82** will typically be equipped with a roller. The connection at connection point **86** between the over-center link **82** and connecting rod **90** will typically be a pinned connection.

Release, i.e. removal of actuation force **112** from the push pad actuator arm **14** will cause the latching mechanism **92** and bolt assembly **94** to return to their latched positions due to the upwardly directed force exerted by biasing spring **102** which pulls the connecting rod **90**, over-center link **82**, lever arm **74**, and motion transfer link **40** to their first latched positions.

With continued reference to FIGS. **6**A and **6**B, the push pad exit device **10** of the present invention may also be equipped with an optional lock **108**, illustrated schematically, that allows a user to open the door **28** from the outside with the door in its latched or locked position. In such an installation, the push pad exit device **10** will typically be equipped with the centrally located interior and exterior housings **22** and **24**, respectively. Located within the centrally located exterior housing **24** is an exterior lock **108** which in a preferred embodiment is a keyed lock. However, the lock may also be a key pad or magnetic card style lock. The lock is configured to operate a push rod **110** which bears against upper link end **70** of the motion transfer link **40**. When the push pad exit device **10** is in the latched or locked position, actuation of the exterior lock **108** causes the push rod **110** to push upper link end **70** from its first latched position on wall surface **100** (see FIG. **6**A) to its second unlatched position on the opposite wall surface **98** (see FIG. **6**B) and therein sets in motion the sequence of events described above that unlatches or unlocks the door.

Push Pad Actuator Arm—Alternative Embodiment

Referring now to FIGS. **7**A and **7**B, an alternative embodiment of the push pad actuator **13** is shown. FIG. **7**A shows the alternative embodiment of the push pad actuator **13** in a first or door locked position. FIG. **7**B shows the alternative embodiment of the push pad actuator **13** in a second or door unlocked position. The alternative embodiment of the push pad actuator **13** is similar to that of FIGS. **4**A and **4**B with the exception that a parallel linkage assembly **126** is used to actuate the push pad actuator arm **14**, whereas in the embodiment shown in FIGS. **4**A and **4**B, the push pad actuator arm **14** pivoted about pivot **28** on the push pad actuator housing **26**.

As in the pivoting embodiment of FIGS. **4**A and **4**B, in the parallel linkage embodiment of FIGS. **7**A and **7**B, the push pad actuator **13** includes a push pad actuator housing **26** and a push pad actuator arm **14**. The front face of the push pad actuator arm **14** will typically be engraved or otherwise marked with nomenclature **16**, such as the word "PUSH." to make clear where the push pad actuator arm **14** should be pushed to most effectively operate push pad exit device **10**. (See FIG. **2**.)

With reference to FIGS. **2**, **7**A and **7**B, the push pad actuator housing **26** is fixed at one end **46** near the pivoting end **44** of the door **28** and at another end **50** near the free or swinging end **48** of the door **28**. For illustrative purposes only, a double pane swinging glass door is shown schematically in the figures. Suitable attachment hardware **42** and **52** for attaching the push pad actuator housing **26** at the pivoting end **44** and free or swinging end **48** of the door **28** are known in art. Such hardware will vary in configuration depending upon the specific type of door construction i.e. glass, double pane glass, or wood or metal.

With continued reference to FIGS. **7**A and **7**B, the push pad actuator arm **14** is attached to the push pad actuator housing **26** by means of the parallel linkage assembly **126**. The parallel linkage assembly **126** includes a linear guide track **128**, which is fixed to the push pad actuator arm **14**; a first parallel link **130** having a first link end **136** and a second link end **138**; a second parallel link **132**, having, a first link end **140** and second link end **142**; and, a connecting rod **144**.

The first link ends **136** and **140** of the first and second parallel links **130** and **132** are fixed to the push pad actuator housing by means of pivot connections **150**, where the pivot connections **150** each include a torsion spring **154** which serve to bias the parallel linkage assembly **126** to an outward or door locked position.

The upper link end **138** of the first parallel link **130** is pivotally connected to an end **146** of the connecting rod **144** and the upper link end **142** of the second parallel link **132** is connected to another end **148** of the connecting rod **144**. Each link end to connecting rod connection includes a roller **152**, i.e. the connection between upper link end **138** and connecting rod end **146** includes a roller **152** and the connection between upper link end **142** and connecting rod end **148** also includes a roller **152**.

FIG. **7**A, shows the push pad actuator arm **14** in its first or locked position. Upon the application of force by a user on the push pad actuator arm **14**, i.e. application force **112**, the biasing force exerted by the torsion springs **154** is overcome and the push pad actuator arm **14** moves inwardly to its second or unlocked position and causes the connecting tongue **38** to depress inwardly the lower link end **68** of the motion transfer link **40** and therein actuates the latching mechanism **92** and unlocks the door **28**, as described in reference to FIGS. **5**, **6**A and **6**B.

With continued reference to FIGS. **7**A and **7**B, in more detail the application of an actuating force **112** to the push pad actuator arm **14** causes the parallel links **130** and **132** to rotate downwardly moving from their first or locked position to their second or unlocked position. The connecting rod **144** likewise moves downwardly from a first or locked position to a second or unlocked position, while rolling via the rollers **152** towards the pivoting end **44** of the door **28** in the linear guide track **128**. Because the linear guide track **128** is fixed to the push pad actuator arm **14** and the parallel links **130** and **132** are fixed at link ends **136** and **140** to the push pad housing **26**, which is fixed to the door **28**, the parallel linkage assembly **126** suspends the push pad actuator arm **14** from the push pad actuator housing **26** and allows it to move between its first or locked position to its second or unlocked position.

It should be noted that because of the action of the parallel linkage assembly **126**, the push pad actuator arm moves linearly inwardly towards the surface of the door **28**. The push pad actuator arm **14** does not pivot (as in, for example, the embodiment disclosed in FIGS. **4**A and **4**B and nor does it move laterally with respect to the push pad actuator housing **26**. The alternative embodiment of the push pad actuator **12** described in FIGS. **7**A and **7**B provides a distinctly different "feel" from that of the embodiment described in FIGS. **4**A and **4**B, which may be preferred by in some installations.

Like the embodiment of the push pad actuator **12** depicted in FIGS. **4**A and **4**B, the alternative embodiment of the push pad actuator **13** depicted in FIGS. **7**A and **7**B may optionally be equipped with the manual catch or dogging assembly **60** which comprises the catch fitting **34** including the catch **62** and the slide assembly **32** including the slide member **64** and the finger extension **66** attached to the slide member **64**. In both embodiments of the push pad actuator, the manual catch **60** allows a user to lock the door **28** in art unlatched position which thereby allows door to swing freely and the push pad actuator to be used as an interior door handle. The manual catch **60** is shown in the engaged position in FIG. **7**B and in the disengaged position in FIG. **7**A.

Likewise, in the alternative embodiment of the push pad actuator **13**, the motion of the push pad actuator arm **14** may also be limited by the travel limit screws **36**A and **36**B.

The foregoing detailed description and appended drawings are intended as a description of the presently preferred embodiment of the invention and are not intended to represent the only forms in which the present invention may be constructed and/or utilized. Those skilled in the art will understand that modifications and alternative embodiments of the present invention which do not depart from the spirit and scope of the foregoing specification and drawings, and of the claims appended below are possible and practical. It is intended that the claims cover all such modifications and alternative embodiments.

The invention claimed is:

1. A push pad exit device, comprising:

a push pad actuator having an actuator arm pivotally mounted horizontally on a door at one end and engageable at a free end with a motion transfer link of a latch assembly, the actuator arm having a first position corresponding to a first latched position and a second position corresponding to a first unlatched position;

the latch assembly, enclosed within a door handle mounted vertically on a door;

the latch assembly operable to cause a latch bolt assembly to engage and disengage with a latching recess in a door frame to transition the door between the first latched position and the second unlatched position;

the latch assembly comprising the motion transfer link, a lever arm, and an over-center link, the motion transfer link, lever arm and over-center link being in mechanical connection and having first positions corresponding to the first latched position and second positions corresponding to the second unlatched position;

wherein the motion transfer link converts horizontal motion from the push pad actuator into vertical motion in the latching assembly;

wherein the latch bolt assembly biases the actuator arm and latching mechanism to the first latched position;

wherein the application of inwardly directed force to the actuator arm biases the actuator arm and the latching assembly to the second unlatched position; and

wherein the motion transfer link and lever arm have lower and upper link ends and the over-center link has three connection points, wherein the lower link end of the motion transfer link engages a connecting tongue of the actuator arm and wherein the upper link end of the motion transfer link engages the lower link end of a lever arm, wherein the upper link end of the lever arm engages a first connection point of the over-center link; the second connection point of the over-center link engaging the latch bolt assembly and wherein the third connection point of the over-center link engages an interior wall surface of the door handle.

2. The push pad exit device of claim **1**, wherein the motion transfer link is a pivoting link, pivotable between its first latched position and its second unlatched position.

3. The push pad exit device of claim **1**, wherein the lever arm is a pivoting link, pivotable between its first latched position and its second unlatched position.

4. The push pad exit device of claim **1**, wherein the upper link end of the motion transfer link includes a roller and engages the lower end of the lever arm by sliding or rolling upon a wedging surface of the lower end of the lever arm.

5. The push pad exit device of claim **1**, wherein the lower link end the motion transfer link is equipped with a roller.

6. The push pad exit device of claim 1, wherein the third connection point of the over-center link includes a roller and engages the interior surface of the inner wall of the door handle by sliding or rolling upon the interior surface.

7. The push pad exit device of claim 1, further including a lock assembly, the lock assembly having operating means to operate a push rod, the push rod being engageable at one end with the upper link end of the motion transfer link of the latching assembly, wherein operating the lock causes the push rod to bias the latching assembly to its second unlatched position.

8. The push pad exit device of claim 1, further including a manual catch, the manual catch being operable to lock the actuator arm in its second unlatched position, wherein and the latching mechanism is locked in its second unlatched position.

9. The push pad exit device of claim 1, wherein the actuator arm is marked with indicia indicating a preferred position where a user should push on the arm.

10. The push pad exit device of claim 7, wherein a first housing is disposed between the door handle and the surface of the door intermediate the ends of the handle and a second housing is disposed on an opposite surface of the door, wherein the lock is contained within the second housing and the push rod interconnecting the lock and motion transfer link is concealed within the first and second housings.

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